

	A	B	C	D	E	F	G	H	I	J	K	L			
1				Background Statistics for Data Sets with Non-Detects											
2				User Selected Options											
3			Date/Time of Computation	10/22/2015 2:50:45 PM											
4			From File	WorkSheet.xls											
5			Full Precision	OFF											
6			Confidence Coefficient	95%											
7			Coverage	95%											
8			Different or Future K Observations	1											
9			Number of Bootstrap Operations	2000											
10															
11			HxCDF												
12															
13			General Statistics												
14			Total Number of Observations	31			Number of Missing Observations		0						
15			Number of Distinct Observations	30											
16			Number of Detects	18			Number of Non-Detects		13						
17			Number of Distinct Detects	18			Number of Distinct Non-Detects		12						
18			Minimum Detect	3.3000E-5			Minimum Non-Detect		9.7600E-6						
19			Maximum Detect	2.4000E-4			Maximum Non-Detect		1.0900E-4						
20			Variance Detected	3.5251E-9			Percent Non-Detects		41.94%						
21			Mean Detected	1.1987E-4			SD Detected		5.9373E-5						
22			Mean of Detected Logged Data	-9.164			SD of Detected Logged Data		0.563						
23															
24			Critical Values for Background Threshold Values (BTVs)												
25			Tolerance Factor K (For UTL)	2.197			d2max (for USL)		2.76						
26															
27			Normal GOF Test on Detects Only												
28			Shapiro Wilk Test Statistic	0.956			Shapiro Wilk GOF Test								
29			5% Shapiro Wilk Critical Value	0.897			Detected Data appear Normal at 5% Significance Level								
30			Lilliefors Test Statistic	0.122			Lilliefors GOF Test								
31			5% Lilliefors Critical Value	0.209			Detected Data appear Normal at 5% Significance Level								
32			Detected Data appear Normal at 5% Significance Level												
33															
34			Kaplan Meier (KM) Background Statistics Assuming Normal Distribution												
35			Mean	7.6680E-5			SD		6.8161E-5						
36			95% UTL95% Coverage	2.2643E-4			95% KM UPL (t)		1.9422E-4						
37			90% KM Percentile (z)	1.6403E-4			95% KM Percentile (z)		1.8880E-4						
38			99% KM Percentile (z)	2.3525E-4			95% KM USL		2.6477E-4						
39															
40			DL/2 Substitution Background Statistics Assuming Normal Distribution												
41			Mean	7.9577E-5			SD		6.6441E-5						
42			95% UTL95% Coverage	2.2555E-4			95% UPL (t)		1.9415E-4						
43			90% Percentile (z)	1.6472E-4			95% Percentile (z)		1.8886E-4						
44			99% Percentile (z)	2.3414E-4			95% USL		2.6292E-4						
45			DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons												
46															
47			Gamma GOF Tests on Detected Observations Only												
48			A-D Test Statistic	0.295			Anderson-Darling GOF Test								
49			5% A-D Critical Value	0.743			Detected data appear Gamma Distributed at 5% Significance Level								
50			K-S Test Statistic	0.114			Kolmogorov-Smirnov GOF								

	A	B	C	D	E	F	G	H	I	J	K	L
51					5% K-S Critical Value	0.205		Detected data appear Gamma Distributed at 5% Significance Level				
52								Detected data appear Gamma Distributed at 5% Significance Level				
53												
54								Gamma Statistics on Detected Data Only				
55					k hat (MLE)	3.854					k star (bias corrected MLE)	3.248
56					Theta hat (MLE)	3.1106E-5					Theta star (bias corrected MLE)	3.6902E-5
57					nu hat (MLE)	138.7					nu star (bias corrected)	116.9
58					MLE Mean (bias corrected)	1.1987E-4						
59					MLE Sd (bias corrected)	6.6509E-5					95% Percentile of Chisquare (2k)	13.33
60												
61								Gamma ROS Statistics using Imputed Non-Detects				
62								GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs				
63								GROS may not be used when kstar of detected data is small such as < 0.1				
64								For such situations, GROS method tends to yield inflated values of UCLs and BTVs				
65								For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates				
66					Minimum	3.3000E-5					Mean	0.00426
67					Maximum	0.01					Median	1.8500E-4
68					SD	0.00496					CV	1.163
69					k hat (MLE)	0.371					k star (bias corrected MLE)	0.357
70					Theta hat (MLE)	0.0115					Theta star (bias corrected MLE)	0.012
71					nu hat (MLE)	23.01					nu star (bias corrected)	22.12
72					MLE Mean (bias corrected)	0.00426					MLE Sd (bias corrected)	0.00714
73					95% Percentile of Chisquare (2k)	3.083					90% Percentile	0.0123
74					95% Percentile	0.0184					99% Percentile	0.0341
75								The following statistics are computed using Gamma ROS Statistics on Imputed Data				
76								Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods				
77						WH	HW				WH	HW
78					95% Approx. Gamma UTL with 95% Coverage	0.0279	0.0339				95% Approx. Gamma UPL	0.0183
79					95% Gamma USL	0.0432	0.0575					0.0204
80												
81								The following statistics are computed using gamma distribution and KM estimates				
82								Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods				
83					k hat (KM)	1.266					nu hat (KM)	78.47
84						WH	HW				WH	HW
85					95% Approx. Gamma UTL with 95% Coverage	3.2255E-4	3.5618E-4				95% Approx. Gamma UPL	2.3802E-4
86					95% Gamma USL	4.4670E-4	5.1801E-4					2.5241E-4
87												
88								Lognormal GOF Test on Detected Observations Only				
89					Shapiro Wilk Test Statistic	0.952					Shapiro Wilk GOF Test	
90					5% Shapiro Wilk Critical Value	0.897					Detected Data appear Lognormal at 5% Significance Level	
91					Lilliefors Test Statistic	0.122					Lilliefors GOF Test	
92					5% Lilliefors Critical Value	0.209					Detected Data appear Lognormal at 5% Significance Level	
93								Detected Data appear Lognormal at 5% Significance Level				
94												
95								Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects				
96					Mean in Original Scale	8.2821E-5					Mean in Log Scale	-9.676
97					SD in Original Scale	6.3071E-5					SD in Log Scale	0.754
98					95% UTL95% Coverage	3.2951E-4					95% BCA UTL95% Coverage	2.4000E-4
99					95% Bootstrap (%) UTL95% Coverage	2.4000E-4					95% UPL (t)	2.3067E-4
100					90% Percentile (z)	1.6515E-4					95% Percentile (z)	2.1723E-4

